Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1 – 53. (Canceled)

54. (Currently amended) A method of screening for a biological response comprising:

a) obtaining a linear or circular expression element by a process comprising: obtaining a DNA segment comprising an open reading frame[[;]] and *in vitro* linking the open reading frame to a promoter to create a linear or circular expression element; and

b) providing the linear or circular expression element to a cell without intervening bacterial propagation or cloning, under conditions conducive to expression of any product encoded for by the open reading frame, such that a biological response is produced in the cell.

55. (Currently amended) The method of claim 54, wherein the DNA segment is obtained from a process involving PCR[[®]].

56. (Previously amended) The method of claim 54, wherein the open reading frame is non-covalently linked to the promoter.

57. (Currently amended) The method of claim [[54]]56, wherein the non-covalent linkage is performed by:

a) obtaining a PCR[[®]] product comprising the open reading frame, which PCR[[®]] product is obtained by amplification from at least one primer that has complementary stretches comprising deoxyuridines [[with]]which have been cleaved by uracil-DNA glycosylase to create overhangs to which the promoter and terminator can link;

b) providing a promoter and a terminator; and

c) non-covalently linking the promoter and the terminator to the open reading frame to create the linear or circular expression element.

58. (Previously amended) The method of claim 54, wherein the linear or circular expression element is injected into the cell.

59. (Currently amended) The method of claim 59, wherein ~~more than one type of~~ a second linear or circular expression element comprising a second open reading frame having a different sequence is introduced [[to]]into the cell.

60. (Currently amended) The method of claim 108, ~~further~~ defined as a method of producing antibodies.

61. (Currently amended) The method of claim 108, ~~further~~ defined as a method of ~~vaccinating~~ immunizing the animal.

62. (Currently amended) The method of claim [[61]]108, wherein the animal is a mammal.

63 – 96.(Canceled)

97. (Previously added) The method of claim 54, wherein the DNA segment is obtained from a process involving chemical synthesis.

98. (Previously added) The method of claim 54, wherein the linear or circular expression element further comprises a terminator linked to the open reading frame.

99. (Previously added) The method of claim 98, wherein obtaining the expression element further comprises non-covalently linking a terminator to the open reading frame.

100. (Previously added) The method of claim 98, wherein the terminator is a eukaryotic terminator.

101. (Previously added) The method of claim 54, wherein the open reading frame is produced *in vivo* and then non-covalently linked to the promoter *in vitro*.

102. (Currently amended) The method of claim 54, wherein obtaining the expression element comprises using polymerase chain reaction to produce the open reading frame.

103. (Previously added) The method of claim 54, wherein obtaining the expression element comprises chemical synthesis of the open reading frame.

104. (Previously added) The method of claim 54, wherein the promoter is a eukaryotic promoter.

105. (Canceled)

106. (Previously added) The method of claim 54, wherein the cell is in a tissue culture.

107. (Previously added) The method of claim 54, wherein the cell is in an organism.

108. (Currently amended) The method of claim 107, wherein the organism[[cell] is an animal.

109. (Previously added) The method of claim 58, wherein the injection is performed using microprojectile bombardment.

II. RESPONSE TO OFFICE ACTION

A. State of the Claims

Claims 54-62 and 97-109 were pending at the time of the Action. Claims 54, 55, 57, 59, 60-62, 102 and 108 have been amended herein. Claim 105 is canceled herein without prejudice or disclaimer. Support for amendment to the claims may be found in the specification and the claims as originally filed. Specifically, the amendments to claim 54 may be found on page 13, lines 8-22 and in the examples on pages 83-90. No new matter has been added.

Thus, claims 54-62, 97-104 and 106-109 are presently pending.

B. Rejection of the Claims Under 35 U.S.C. §112, Second Paragraph are Overcome

The Action rejects claims 55, 57, 59-62, 100, 102, 104 and 108 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claims 55 and 57 were rejected for containing the trademark/trade name PCR®. Claims 55 and 57 have been amended to resolve this issue.

Further, claim 57 has been rejected as being vague and unclear in the relationship between deoxyuridines and uracil-DNA glycosylase. Claim 57 has been amended in a manner believed to resolve the issues set forth by the Examiner. Amended claim 57 recites "obtaining a PCR product comprising the open reading frame, which...has complementary stretches comprising deoxyuridines which have been cleaved by uracil-DNA glycosylase...to create the linear or circular expression element."

Claim 59 was rejected for being vague with regard to the phrase "more than one *type* of linear or circular expression element..." Claim 59 has been amended to resolve this issue.

Claims 60-62 were rejected for being vague with regard to the phrase "further defined as..." Claims 60-62 have been amended to resolve this issue.

Claim 102 is rejected for being vague with regard to the phrase "expression element comprises polymerase chain reaction..." Claim 102 has been amended to resolve this issue.

The Examiner has also rejected claims 100 and 104 for being vague and indefinite. Applicants traverse this rejection. Applicants do not believe that claims 100 and 104 are vague or indefinite, as one of ordinary skill in the art would know that a promoter/terminator from a eukaryotic cell by definition was derived from a eukaryotic cell, and by definition functions to terminate/promote open reading frame expression.

Claim 108 is rejected for using the term "cell" to mean an animal. Claim 108 has been amended to resolve this issue.

In light of the foregoing, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 55, 57, 59-62, 100, 102, 104 and 108 under 35 U.S.C. §112, second paragraph.

C. Rejection of the Claims Under 35 U.S.C. §102(b) are Overcome

1. Rejection of the Claims as Being Anticipated by Rashtchian et al. are Overcome

Claims 54-57, 59, 97-104 and 106-109 are rejected under 35 U.S.C. §102(b), as being anticipated by Rashtchian *et al.*

The Action states that Rashtchian *et al.* teach expression constructs where the DNA segment or open reading frame is produced through PCR or chemical synthesis and noncovalently linked *in vitro*; the noncovalent process involves 5' tails containing deoxyuridine residues – every third base – which uracil DNA glycosylase (UDG) subsequently acts upon to

generate 3' cohesive termini which can be annealed (noncovalently) to complementary sequences in a suitable vector or another PCR-amplified DNA fragment. The Action further contends that Rashtchian *et al.* teach using T7 or SP6 promoters in constructing expression elements and that the expression constructs express a target product in a cell, where the target product has a biological activity or effect either directly or indirectly in the cell.

Applicants do not agree that Rashtchian *et al.* anticipates the claimed invention. In order for a claim to be anticipated by a reference, all elements of the claims must be disclosed in the reference.

Rashtchian *et al.* do not teach all the limitations of present claim 54. Claim 54, from which claims 55-57, 59, 97-104 and 106-109 depend recites:

> "A method of screening for a biological response comprising: (a) obtaining a linear or circular expression element by a process comprising: obtaining a DNA segment comprising an open reading frame and *in vitro* linking the open reading frame to a promoter to create a linear or circular expression element; and (b) providing the linear or circular expression element to a cell without intervening bacterial propagation or cloning under conditions conducive to expression of any product encoded for by the open reading frame, such that a biological response is produced in the cell."

Rashtchian *et al.* do not teach production of a linear or circular expression element that does not involve cloning or bacterial propagation of the linear or circular expression element as in present claim 54. Rather, Rashtchian *et al.* teach the production of molecular clones in bacteria that must be placed in a plasmid carrying a bacterial origin of replication and then used to transform *E. coli*. Further, Rashtchian *et al.* teach plasmid clones generated *in vivo* by replication and subsequently purified.

In light of the foregoing, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 54-57, 59, 97-104 and 106-109 as being anticipated by Rashtchian *et al.*

2. Rejection of the Claims as Being Anticipated by Ward et al. are Overcome

The Action rejects claim 54-55, 97-98, 100 and 102-108 as being anticipated by Ward *et al.* The Action contends that Ward *et al.* teach expression constructs where DNA fragments are obtained either by restriction endonuclease digestion, chemical synthesis or PCR. In addition, the Action contends that Ward *et al.* teach a promoter linked to a gene and vector backbones ligated with DNA fragments where the fragments are ligated by linking *in vitro*. Further, the Action contends that Ward *et al.* teach terminators capable of functioning in mammalian cells and providing expression elements to mammalian cells under conditions wherein an open reading frame is expressed and a biological response is produced in the cell. Furthermore, the Action contends that Ward *et al.* teach a vaccinia recombinant virus to express proteins in mammalian cells where the cells are infected with the recombinant virus without any intervening bacterial propagation. Applicants traverse this rejection.

Ward *et al.* do not teach all of the limitations of claim 54. Ward *et al.* do not teach and do not involve the use of a linear or circular expression element without intervening cloning or bacterial propagation of the linear or circular expression element as in present claim 54. Specifically, Ward *et al.* teach a method for formation of recombinant vaccine viruses where the recombinant molecules are placed in a plasmid carrying a bacterial origin of replication which are then used to transform *E coli*.

Thus, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 54-55, 97-98, 100 and 102-108 as being anticipated by Ward *et al.*

3. Rejection of the Claims as Being Anticipated by Johnston et al. (U.S. Patent No. 5,703,057) are Overcome

The Action rejects claims 54-55, 58-62, 97-98, 100, 102-104 and 106-109 as being anticipated by Johnston *et al.* The Action further contends that Johnston *et al.* teaches a method of introducing expression constructs into cells using microprojectile bombardment into mice. The Action further contends that Johnston *et al.* teaches that an expression library comprising various open reading frames can be made using genomic DNA or PCR to obtain cDNA from source RNA before linking to promoters and terminators to form expression constructs, for the purpose of eliciting a biological response in a animal. The Action further contends that Johnston *et al.* teaches injecting multiple expression constructs into an animal as well as using promoters and terminators capable of function in eukaryotic systems. Moreover, the Action contends that Johnston *et al.* teaches a method of screening for a biological response to a library of expression constructs where an open reading frame is linked to a promoter and terminator, where the protein is expressed, identified and used for vaccinating an animal against a particular pathogen.

Johnston *et al.* does not anticipate claims 54-55, 58-62, 97-98, 100, 102-104 and 106-109. Johnston *et al.* does not teach all the elements of the claimed invention. Johnston *et al.* does not teach "A method of screening for a biological response comprising: (a) obtaining a linear or circular expression element by a process comprising: obtaining a DNA segment comprising an open reading frame and *in vitro* linking the open reading frame to a promoter to create a linear or circular expression element; and (b) providing the linear or circular expression element to a cell without intervening bacterial propagation or cloning under conditions conducive to expression of any product encoded for by the open reading frame, such that a biological response is produced in the cell" as in present claim 54. Johnston *et al.* in no way teaches or make mention of linear

or circular expression elements as in the claimed invention. Rather, Johnston *et al.* teaches an Expression Library Immunization (ELI) using plasmids that were prepared *in vivo*.

Applicants further point out the Examiner that claims 55, 58-62, 97-98, 100, 102-104 and 106-109 depend from claim 54 and not only does Johnston *et al.* not teach all aspects of independent claim 54, but also fails to teach all aspects of the claims dependent from claim 54 Throughout the entire specification of the Johnston *et al.* patent there no mention or teaching of linear or circular expression elements as in the claimed invention. Thus, Johnston *et al.* does not anticipate the claimed invention.

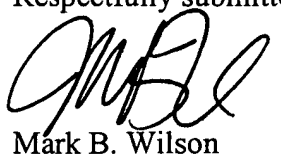
In light of the foregoing, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 54-55, 58-62, 97-98, 100, 102-104 and 106-109 as being anticipated by Johnston *et al.*

D. Conclusion

In view of the above, all of the rejections to the claims have been overcome, and the case is in condition for allowance.

The Examiner is invited to contact the undersigned attorney at (512) 536-3035 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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